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CATHETER ABLATION OF ATRIAL FIBRILLATION IS ASSOCIATED WITH SIGNIFICANT REDUCTION IN LEFT ATRIAL AND PULMONARY VEIN DIMENSIONS

ACC Poster Contributions
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Background: Catheter ablation of atrial fibrillation (CAAF) is performed to restore sinus rhythm in patients with paroxysmal or persistent atrial fibrillation. Pulmonary vein isolation (PVI) is an integral part of the CAAF procedure. Pulmonary vein (PV) stenosis is an uncommon, but serious complication of PVI. This study, to our knowledge, is the largest cohort to assess the effects and complications of CAAF using Cardiac Magnetic Resonance (MR) imaging.

Methods: Cardiac MR was performed before and after 330 CAAF procedures in 273 patients (a subset had multiple procedures). Gadolinium enhanced MR angiography and steady state free procession imaging was preformed to define anatomy, evaluate function and assess left atrial (LA) and PV dimensions. Matched measurements, pre- and post-CAAF, were compared using paired t-test.

Results: There was a significant reduction in the measured PV areas and LA volume after CAAF (table). However, clinically relevant stenosis (defined as at least 50% reduction in PV diameter) was seen in only 4 out of 1122 isolated veins. Left ventricular parameters were not significantly altered by CAAF. Patients who required more than one CAAF had a lower initial ejection fraction (58.8±9.0 vs. 62.1±11.5, P=0.018).

Conclusions: Significant LA remodeling, with reduction in PV and LA dimensions, occurs after CAAF but is rarely associated with clinically relevant PV stenosis.

	Before PVI	After PVI	n	
Left superior PV Area (mm^2)	210±73	180±78	236	P<0.0001
Left Inferior PV Area (mm^2)	175±92	148±62	233	P<0.0001
Right Superior PV Area (mm^2)	314±123	278±150	300	P<0.0001
Right Inferior PV Area (mm^2)	248±96	225±88	296	P<0.0001
LA volume (ml)	87.8±32.3	74.7±26.7	177	P<0.0001
Ejection Fraction (%)	61.8±9.8	61.9±9.1	279	P=0.88
Left Ventricular End Diastolic Volume (ml)	163±40	163±39	222	P=0.96
Left Ventricular End Systolic Volume (ml)	66±35	65±30	165	P=0.58